Jihad Boutros Aoun

Thesis

Deflection of Beams Reinforced With Fiber-Reinforced Polymer (FRP)

Abstract

This project is intended to study, evaluate and develop a rational method for predicting deflection of concrete beams reinforced with FRP and steel bars. The development method is based on the integration of a tri-linear moment-curvature relationship. Similar to Razaqpur et al [1] method, the proposed method is based on the assumption that the moment-curvature relation of cracked FRP reinforced beam remains linear under increasing load and that the tension stiffness is negligible.

A number of beams tested by different investigators are analysed to evaluate the accuracy of the new method. In addition, instead of performing the integration analytically, a numerical integration technique as proposed by Ghali et al [9] is used to ascertain its accuracy. The results of Ghali's integration technique are compared with other methods and with experimental data. The results of Ghali's and the proposed methods compare well with available experimental data for beams reinforced with FRP or steel bars.

Degree

M.Eng.

Completion

2006

Supervisor

Razaqpur

Academic Supervisor

Isgor